

Fall 2025 Quad II

Meeting days: Mondays 10/27 – 12/15	
Meeting times: ~5:00-8:00 pm	Phone: TBA
Meeting location: Balboa RM156	E-mail: ksnyman@pointloma.edu
Final Exam: cumulative exam in class week 8, Dec. 15 th	Office location and hours: KIN Office #106 or zoom Office hours:

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

COURSE DESCRIPTION

This course provides an advanced understanding of the clinical effects and physiologic adaptations of the human body to exercise interventions. The effects of exercise on the organ systems of the body will be explored through lecture and laboratory experiences with an emphasis toward combatting obesity, diabetes, and metabolic syndrome. The clinical application of current research will occur in lab settings.

COURSE LEARNING OUTCOMES

1. **Bioenergetics & Cardiorespiratory Physiology (Weeks 1, 2, 3)**
 - a. Understand the biochemistry and thermodynamics of energy metabolism – regulation of metabolism review
 - i. **Wk 1 Labs:** Lab Facility Introduction, metabolic cart calibration & standards of practice for all descriptive intake testing, HRT + BP assessment practice, Wingate anaerobic power testing (all)
 - b. Cardiovascular Physiology & Disease
 - c. Respiratory Physiology & Disease
 - i. **Wk 2 Labs:** submaximal aerobic testing (Astrand Rhyming, 3 participants), Submaximal metabolic testing Energy Expenditure + exercise domain Testing (EPOC) lab (1-2 participants)

- d. Cardiorespiratory Responses to Exercise & Training Adaptations
 - i. **Wk 3 Labs:** VO₂max with verification bout (1-2 participants) (HRT, BP Assessment, BIA Body Composition Assessment)

Due dates: WK 1 lab due end of WK 3 (Sunday, Nov. 16th at 11:15pm PST)

2. Environmental Impacts of Health & Cardiorespiratory Physiology: Heat & Altitude (Week 4)

- a. Labs: Heat & Core Temperature Lab

Due dates: WK 4 lab due end of WK 4 (Sunday, Nov. 23rd)

3. Muscle + Nervous System (Weeks 5 & 6)

- a. Muscle contraction
- b. Biophysical, electrochemical, physiological and functional properties of excitable tissues
- c. Nervous system and resistance training adaptations
 - i. Nervous system structure + function
 - ii. Electromyography + Neuromuscular adaptations
- d. Structure, ultrastructural, physiological, and functional properties of skeletal muscle
- e. Differentiate among the various types of muscle fibers and implications for performance and trainability.
- f. Compare, contrast, and discuss the different muscle fiber properties and neuromuscular activation strategies.
 - i. WK 5 Labs: Basics of neuromuscular function testing: B-mode ultrasound for muscle cross sectional area assessment (hands on practice week 5)
 - ii. WK 6 Labs: Electromyography (Theory/video demo)

Due dates: WK 5 and 6 combined lab due end of WK 6 (Sunday, Dec 7th)

4. Endocrinology & Immune Function (Weeks 7 & 8)

- a. Neuroendocrine control of metabolism
- b. Role of the endocrine system in response and adaptation to aerobic training (untrained vs. trained)
 - i. WK 7 Labs: Glucose screening procedures: Blood Glucose Meter challenge pre – post class. Lab due end of WK 7 (Sunday, Dec. 14th)
- c. Role of immune system in response and adaptation to aerobic training (untrained vs. trained)

WK 8: Cumulative Final Exam In Class, Dec 15th 5:00 – 7:30pm

COURSE SCHEDULE AND ASSIGNMENTS

Rubrics for the article presentation, lab reports, take-home exams, and synthesis table are posted on Canvas under each assignment's directions.

1. **Readings:** Peer-reviewed journal articles and textbook reading excerpts will be posted on Canvas for each week.
2. **Quizzes:** Wednesdays of each week will include a quiz based on the assigned readings due by 11:59 pm PST
3. **Lecture/discussion:** Most classes will consist of ~30 minutes of lecture and classroom discussion. This time will be spent giving background information on the weekly topics and exploring the physiology of the processes being discussed. The remainder of the time will be spent in lab.

4. **Article Discussion board presentations:** Each student will present an article to the discussion board for review/discussion once during the class. Each peer will be responsible for at least one engaging response to the article post.
5. **Laboratory:** A portion of the class will involve conducting exercise testing on the students in the class. This will be an opportunity for students to see, experience personally, and conduct some of the standard exercise physiology laboratory testing procedures. (60 – 90 min on lab days)
6. **Lab reports:** There will be five laboratory reports during the quad. Students will use the results of the exercise tests conducted in the laboratory portion of the class to answer physiology-based questions in order to put the basic understanding of physiology into practical use.
7. **Exams:** There will be one, cumulative final exam hosted in-class (multiple choice and short response). The emphasis will be on students gaining an understanding of the concepts discussed in class lecture videos, discussions, and labs to the extent that they can apply them to practical situations.
8. **Synthesis table:** Students will use the research articles read for class and any other peer-reviewed research articles they find necessary to fill in the synthesis table(Cardiorespiratory normal vs. pathology physiology). The template will be provided on Canvas.

Competency	Performance Domains and Associated Competencies	Lecture, Lab, or both
I.A.1.e	Knowledge of the epidemiology, pathophysiology, progression, risk factors, key clinical findings, and treatments of chronic diseases.	Lecture
I.A.2.b	Skill in assessing various vital signs.	Lab
I.B.1.b	Knowledge of use of open-ended inquiry, active listening and attention to nonverbal behavior, interest and empathy.	Lab
I.B.1.d	Knowledge of the procedure to obtain informed consent from patient to meet legal requirements.	Lab
I.B.2.a	Skill in administering informed consent.	Lab
I.B.2.d	Skill in data collection during baseline intake assessment.	Lab
I.C.1.a	Knowledge of best practice-based intake assessment tools and techniques to assess and interpret clinical and health measures (e.g., height, weight, anthropometrics, body mass index, resting energy expenditure).	Lab
I.C.1.c,d	Knowledge of normal cardiovascular, pulmonary and metabolic anatomy and physiology; Knowledge of techniques for assessing signs and symptoms (e.g., peripheral pulses, blood pressure, edema, pain).	Lecture
I.E.1.k	Knowledge of recognizing adverse effects of exercise in apparently healthy persons or those with chronic disease.	Lecture

II.A.1.a-c	Knowledge of tests to assess submaximal aerobic endurance, knowledge of the acute and chronic responses to aerobic exercise on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine and immune systems in trained and untrained individuals ; knowledge of mechanisms underlying the acute and chronic responses to aerobic exercise on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine and immune systems in trained and untrained individuals.	Lecture
II.A.1.f,h	Knowledge of typical submaximal aerobic test results and physiological values in trained and untrained individuals and those with and without chronic diseases; Knowledge of abnormal readings and results from exercise testing equipment (e.g., treadmill, ergometers, electrocardiograph, spirometer, metabolic cart, sphygmomanometer) that may indicate equipment malfunction.	Both
II.A.2.b	Skill in administering and interpreting of submaximal aerobic exercise tests	Both
II.B.1.b,d,e	Knowledge of the acute and chronic responses to resistance exercise on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine and immune systems in trained and untrained individuals; Knowledge of the acute and chronic responses to flexibility and mobility exercise on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine and immune systems; Knowledge of the mechanisms underlying the acute and chronic responses to resistance exercise on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine and immune systems in trained and untrained individuals.	Lecture
II.C.1.l,m,n	Knowledge of tests to assess maximal exercise tolerance; knowledge of the physiologic responses during incremental exercise to maximal exertion in trained and untrained individuals and those with and without chronic diseases; knowledge of tests to assess maximal exercise tolerance	Lecture
II.C.2.c	Skill in assessing vital signs and symptoms at rest and during exercise.	Lab
II.D.1.c	Knowledge of abnormal signs and symptoms in apparently healthy individuals and those with chronic disease during maximal exercise testing.	Both
II.E.2.b	Skill in assessing vital signs and symptoms at rest and during exercise.	Lab
IV.C.1.a	Knowledge of normal and abnormal exercise responses, signs and symptoms associated with different pathologies (i.e., cardiovascular, pulmonary, metabolic, orthopedic/musculoskeletal, neuromuscular, neoplastic, immunologic and hematologic disorders).	Lecture
IV.D.1.c,d	Knowledge of abnormal signs and symptoms in apparently healthy individuals and those with chronic diseases. Knowledge of the acute and	Lecture

	chronic responses to exercise training on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine and immune systems in trained and untrained individuals.	
IV.E.1.b,c	Knowledge of the acute and chronic responses to exercise training on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine, and immune systems in trained and untrained individuals; knowledge of normal and abnormal exercise responses, signs and symptoms associated with different pathologies.	Both
IV.G.1.c	Knowledge of abnormal signs and symptoms during exercise training in apparently healthy individuals and those with chronic disease	Lecture
V.D.1.f	Knowledge of tools for measuring clinical exercise tolerance and consideration of affect regulation in determining exercise prescription.	Lab

DATE		LOCATION	CLASS CONTENT OR ASSIGNMENT	ASSIGNMENT DUE DATE
Week 1	10/27	RM156	Video Lectures: Canvas: Bioenergetics & metabolism F2F Class: Introduction, Core topics review Lab: Metabolic cart overview, calibration, Wingate Anaerobic power	
Week 2	11/03	RM156	Video Lectures: Canvas: Cardiovascular Physiology Normal vs. Pathology F2F Class: Cardiovascular Physiology Core concepts review Lab: Exercise Intensity Domains: Astrand test (3-4) Submaximal (EPOC testing, 1-2)+ metabolic cart	
Week 3	11/10	RM156	Video Lectures: Canvas: Respiratory Physiology Normal vs. Pathology F2F Class: Exercise Intensity Domains, O ₂ kinetics Lab: VO ₂ max with verification	WK 1,2 & 3 combined lab due Sunday 11/16

DATE		LOCATION	CLASS CONTENT OR ASSIGNMENT	ASSIGNMENT DUE DATE
Week 4	11/17	RM156	Video Lectures: Environmental ExPhys Heat & Altitude F2F Class: Environmental Considerations core concepts Lab: Heat & Core Temperature	
Week 5	11/24	RM156	Video Lectures: Nervous System & Excitable Tissues F2F Class: Neuromuscular Measurement Techniques Lab: B-mode ultrasound	WK 4 lab due Sunday
Week 6	12/01	RM156	Alex Ung (Adapt) / Field Ex Field Trip to Adapt Functional Movement (Carlsbad, CA) <i>5-6:00pm at site</i>	WK 5 lab due
Week 7	12/08	RM156	Video lecture: Immune Function Video Lectures: Endocrinology F2F Class: Exercise Impacts & Hydration dynamics Lab: Glucose challenge	
Week 8	12/15	Rm156	In-class cumulative final exam	WK 7 lab due Monday 12/15
Final Exam Dec 15th: in class 5:00 – 8:00pm				

REQUIRED MATERIALS AND RECOMMENDED STUDY RESOURCES

Required: Selected Textbook reading & peer-reviewed research articles posted on Canvas

Recommended:

1. *Exercise Metabolism*, Hargreaves and Spriet. Second Edition, Human Kinetics. ISBN-10:07360-4103-6
2. *Exercise Physiology: Human Bioenergetics and Its Applications*. Brooks, Fahey, and Baldwin. Fourth Edition, McGraw Hill. ISBN-10: 0072556420
3. Please take advantage of our library's resources! <http://libguides.pointloma.edu/kinesiology>
Our librarians are very responsive and helpful.

ASSESSMENT AND GRADING

Item	Points per assignment	Total points	Percent of total points
1. Final Exam	200 points	200	~28%
2. Discussion participation	7 @ 10 points	70	~9.8%
3. Lab Write ups	5 @ 50 points each	250	~35%
4. Article Presentation	1 @ 20 points each	20	~3%
5. Quizzes	7 @ 10 points	70	~10%
6. Synthesis Table	1 @ 100 points	100	~14%
Total		710	100%

Grade scale (percentage):	
A=93-100	C=73-76
A-=92-90	C-=70-72
B+=87-89	D+=67-69
B=83-86	D=63-66
B-=80-82	D-=60-62
C+=77-79	F=0-59

Students must complete the required program hours in the major (program) from Point Loma Nazarene University with a minimum grade of “C” in each course and an overall 2.00 grade point average.

INCOMPLETES AND LATE ASSIGNMENTS

Assignments not turned in by the **day and time** they are due will immediately lose 50% of possible points. *Please be do NOT wait until last minute to submit assignments!* Technology difficulties are not an acceptable excuse for late work. No late work accepted 24hr+ due date. No late exams accepted.

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination on its scheduled day. No requests for early examinations or alternative days will be approved. In the case of this course, that means submitting your final take-home exam by 11:59 pm on Friday, December 15th at 11:59pm PST.

COMMUNICATION

Canvas announcements and email will be the main forms of communication used by the professor outside of class. Students are expected to check their @pointloma.edu email at least daily. Please ensure that your Canvas course settings are customized for you to receive course announcements as an email. Any information I communicate via email, I will expect you to know.

SPIRITUAL CARE

PLNU Balboa Campus:

PLNU strives to be a place where you grow as whole persons. To this end we provide resources for our graduate students to encounter God and grow in their Christian faith. At the Balboa campus we have an onsite chaplain, Rev. Kevin Portillo who is available during class break times across the week. If you have questions, desire to meet with Rev. Portillo or prayer requests you can contact him directly at KevinPortillo@pointloma.edu.

PLNU COPYRIGHT POLICY

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PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See Academic Policies in the Graduate and Professional Studies Catalog for definitions of kinds of academic dishonesty and for further policy information.

PLNU ARTIFICIAL INTELLIGENCE POLICY

Use of Artificial Intelligence (AI) tools (e.g, ChatGPT, iA Writer, Marmot, Botowski) is not permitted, and use of these tools will be treated as plagiarism.

PLNU ACADEMIC ACCOMMODATIONS POLICY

If you have a diagnosed disability, please contact the Center for Student Success (CSS) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619.563.2810. You may also ask your academic advisor or program director for any additional accommodation information.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies in the Graduate and Professional Studies Catalog for additional detail.

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